

## Chapter2. The Present Condition and Problems of the Automotive Industry in the Republic of Korea

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# Chapter 2

## The Present Condition and Problems of the Automotive Industry in the Republic of Korea

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### *Introduction*

The Republic of Korea became the world's sixth largest automotive producer in 1993, due to the steady growth in domestic demand in recent years. After the sharp appreciation of the Japanese yen from the beginning of 1993, Korean economists argued about whether a high yen is beneficial to Korean economic growth. The conclusion reached was that a high yen would be favorable to the Korean economy because Korea, which has the similar industrial structure to Japan would be able to substantially increase its exports, particularly in the shipbuilding and semiconductor industries. The automotive industry, however was not able to enjoy benefits from the high yen. In fact, Korea's share of the U.S. automotive market is decreasing and Hyundai Motor Co. has shut down its factory in Bromont, Canada.

This paper will clarify the reasons why the Korean automotive industry did not succeed in the U.S. market despite the appreciation of the yen, and examine the problems the industry faces today.

### *1. Characteristics of Production and Exports*

#### **1. The Shift from Exports to Domestic Demand**

Figure 1 shows the changes in Korea's automotive production from the point of view of domestic demand and exports. Production increased gradually from 1982 to 1984, but suddenly jumped from 1985, when the appreciation of the yen started. Production growth stagnated temporarily between 1988 and 1989. Exports, which had supported the production growth, reached a peak in 1988, and dropped in 1989 to 61

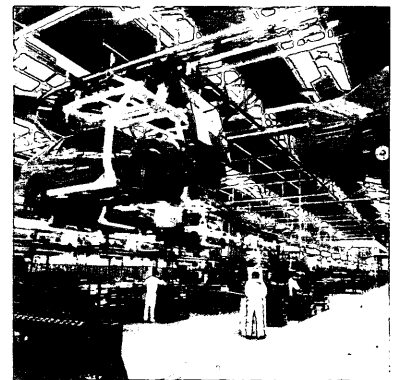
percent of the previous year's total. It is said that export competition in the automotive industry begins after three years exports. Korean automotive exports stagnated from the third year and declined in the fourth. The reasons for this will

be discussed later. Despite the fall in exports, production began to increase rapidly again from 1990, a trend that has continued up to the present. This growth in production has been supported by an increase in domestic demand. It can be concluded that the source of demand for the automotive industry has changed from the overseas to the domestic market.

The reason domestic demand increased was that the general wage level increased as a result of the thousands of labor disputes that occurred after the Korean government's declaration of democratization in 1987. The increased income stimulated sales of Kia Motor's Co's "Pride" small car, especially among the young middle class, partly because of its protection from imports.

#### **2. Characteristics of the Korean Automotive Industry**

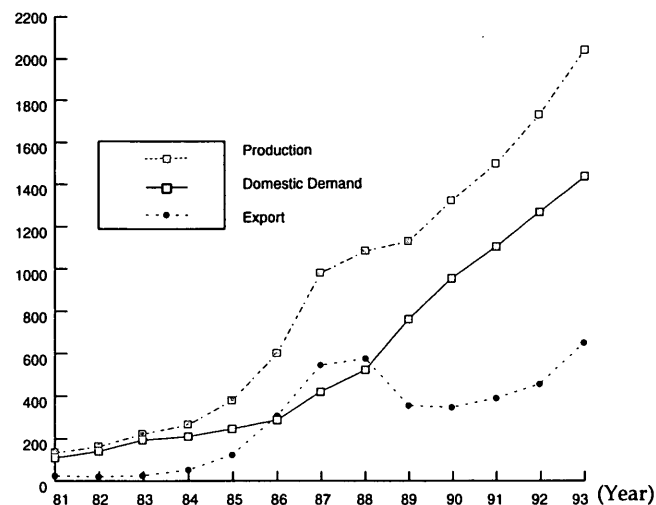
There are five passenger car manufacturers in Korea; namely, Kia Motors Co., Hyundai Motors Co., Daewoo Motors Co., Sangyong Motor Co., and a new-comer, Samsung Motors Inc., which was accepted to



**A Car Manufacturer in Korea**

**Figure 1 Transition of Car Production, Domestic Demand, and Exports**

Number of units (Unit: 1000 units)



Sources: Korean Automobile Manufacturers Association, *Automotive Industry in Korea*.

join manufacturing passenger cars in December 1994.

According to the production figures for 1992, the Korean automotive industry has a high ratio of its production in passenger cars: over 76 percent, compared to 24 percent for buses and trucks. More than 93 percent of vehicle exports are passenger cars, while the figure for trucks and buses is less than 7 percent. These figures show that the passenger car share is overwhelmingly higher than that of commercial vehicles. This paper will therefore focus on passenger cars and companies that mainly produce this type of automobile.

### 3. Exports to the U.S. Market: A Downward Trend after the Peak of 1988

Passenger cars exported to the U.S. market accounted for 85 percent of Korea's total exports between 1986 and 1988. Korean passenger cars sold explosively because there were no competing cars in the 6,000-dollar price range; U.S. auto-makers had raised their prices following the rise in Japanese export prices after the yen's appreciation in 1985. During this period, Korean passenger car manufacturers depended heavily on the U.S. market. Yet exports decreased after reaching a peak in 1988. There are many reasons for this; for example, troubles with quality, and low values in the used car market compared to those of Japanese small cars.

The Korean government and companies tried to recover the loss in exports by developing other, new markets such as Eastern and Western Europe, Central and South America, the Middle East and Asia. Due to these efforts, the ratio of export dependence on the U.S. market declined to 26 percent in 1992. Hence the excessive reliance on the U.S. market was largely corrected, although the total number of passenger cars exported didn't recover to the 1988 level until 1992.

Korea was able to export 630,000 passenger cars in 1993, which was more than that during the 1988 peak, due to the rising price of Japanese passenger cars following the renewed appreciation of the yen. Yet the share of exports to the U.S. market continued falling. It can be hardly said that Korean passenger cars are succeeding in the U.S. market, despite the yen's rise.

### 4. The Evaluation of Korean Passenger Cars in the U.S. Market

Before 1992, Korean passenger cars failed to increase their U.S. share market because of lack of price competitiveness, and problems concerned in quality. It cannot be denied, however, that Korean companies could have benefited from prices in 1993. The Consumer Reports (CR) (April 1993 and 1994 issues), published by the Consumers Union of U.S., reported as in Table 1.

Table 1 indicates that in 1992 the lowest price of Korean passenger cars was almost the same, or rather higher in some cases, as that of Japanese cars of the same type. But in 1993 the price of Korean passenger cars fell relative to Japanese passenger cars because of the appreciation of the yen. The lowest price of a Hyundai Excel was still more expensive than that of a Toyota Tercel or Honda Civic, but it became cheaper than a Nissan Sentra or Toyota Corolla.

**Table 1 Price Range** (Unit: US\$)

Car Manufacturer	Model	Price of 1992	Price of 1993
Hyundai	Elantra	8,999 - 10,299	9,799 - 11,924
Toyota	Tercel	7,848 - 11,308	8,958 - 10,958
	Corolla	—	12,098 - 16,328
Nissan	Sentra	8,715 - 14,870	10,199 - 14,819
Honda	Civic	8,400 - 15,100	9,400 - 16,490

Source: Consumers Union of U.S., Inc., *Consumer Reports*, Apr. 1993 and Apr. 1994.

It should be noted, however, that people do not buy cars merely because they are cheap; this is different from non-durable goods. Sales are determined by reliability of quality and evaluation in the used car market.

Consumers Union of U.S. publishes reliability indexes for cars every year, based on "frequency-of-repair" data for past models. These "frequency-of-repair" records show problem rates on a five-level scale. A score of 5 means 2.0 percent or less frequency-of-repair in 17 spots; for example, the engine, the fuel system, the brakes, etc. The average score is 3, and 1 is the worst, indicating over 14.8 percent needing repairs.

According to the CR "reliability" indexes in 1994, the Toyota Tercel was the car with the lowest frequency of repair in the small-car category, demonstrating a 70 percent lower rate of repair than the category average, and coming top among the 15 small-car models evaluated. The Toyota Corolla came second, the Honda Civic fourth, and the Nissan Sentra seventh. On the other hand, the Hyundai Excel had a repair rate over 20 percent higher than average, the worst among the 15 models.

Based on these results, Consumer Union of U.S. makes lists of "reliable used cars" and "used cars to avoid". Hyundai's small car the Excel produced between 1988 and 1992, and its medium-sized car the Sonata produced between 1989 and 1992 were listed under "used cars to avoid".

As the above discussion indicates, Korean passenger cars do not have comparative advantage against their Japanese counterparts in either quality or the used car evaluation in the competitive U.S. market.

## **5. The High Yen Facilitates Korean Local Content**

It seems that the reason Korean passenger cars have a high ratio of malfunctions and are unreliable is that there are problems with component production and production design technology. It is well known that the quality of a car depends not only on the production technology of the car manufacturers, but also on that of the component manufacturers. In the case of Japan, the production share of car manufacturers is 30 percent on a value basis, and that of component manufacturers the remaining 70 percent. It can therefore be said that 70 percent of a car's quality is determined by the production technology of the component manufacturers.

In Korea there are various problems with the production technology of component manufacturers, associated not only with car manufacturing but in other industries as well. Korean industries have developed in a pattern where the final assembly maker introduced technology from abroad, mainly from Japan, as well as importing the equipment, components and raw materials for production from other countries. This industrial development pattern has not given local components manufacturers opportunities for growth. In the automotive industry, only the large-scale car manufacturers that belong to the business groups have been growing, with the import of car components as fuel for growth. Domestic components manufacturers have been left behind.

In this industrial structure, the Korean government tried to protect and foster components manufacturers by localizing components manufacturing and enacting various laws to raise the ratio of local contents. But domestic car components were expensive compared to imported ones and their quality varied widely. Car manufacturers were therefore reluctant to purchase domestically produced components. For such reasons, the localization of components production was not as successful as the Korean government hoped.

Unexpectedly, the appreciation of the yen after 1985 caused a radical change in the situation. Owing to the yen's rise, the price of imported components rose rapidly. For car manufacturers, whether they could foster domestic components manufacturers became a question of vital importance.

## *II. The Components Industry*

### **1. An Outline of Components Manufacturers**

Between 1988 and 1991, the number of components manufacturers in the Korean automotive industry increased from 1085 to 1410. This increase is presumed to have been caused by the rise in car production. If we look at the 1410 component manufacturers by number of employees in 1991, we see that 18 percent employed less than 20 workers, 79 percent employed between 21 and 500 workers, and 4 percent employed over 500 workers.

As for components exports in 1991, the number of manufacturers exporting overseas was 128, slightly less than 10 percent of the total. There was no substantial change in the number of exporting manufacturers

between 1987 and 1991. It can be inferred that, although the total number of manufacturers was increasing, there was no big change in the number of companies with sufficient technology to produce exportable products.

Let us now examine the transactions between components manufacturers and car manufacturers. In 1991 there were 473 manufacturers which delivered products to Hyundai Motor Co., 339 to Daewoo Motors Co., and 267 to Kia Motors Co.. Manufacturers that delivered components to more than one car manufacturer are counted more than once in these figures.

In 1991 the purchasing ratios of the car manufacturers were Hyundai Motor Co., 51 percent; Daewoo Motors Co., 53 percent; and Kia Motors Co., 50 percent. Although the number is increasing year by year, the purchasing ratio in Korea (50 - 53 percent) is still low compared to that of Japan (70 percent). Korea's ratio is comparable to that of the U.S..

Japanese passenger cars are reliable in quality and cheap in price partly because car manufacturers have the technology for quality control, but the principal reason is that the Japanese components manufacturers, who produce 70 percent of the total cost of completed passenger cars, are internationally competitive. It has been suggested that the formation of international competitiveness in the Japanese automotive industry, which was once weak, was the result of the Japanese car manufacturers' efforts to foster component manufacturers by maintaining stable long-term relations with them. The Korean automotive industry is trying to establish a system of transactions similar to that in Japan in order to foster its component manufacturers.

## 2. The Characteristics of Four Types of Components Manufacturers

By making reference to the statistics in "*The Handbook of Automobile Industry 1992*", published by the Korea Auto Industries Cooperative Association (KAICA), Korean components manufacturers can be classified into four types based on the structure of their business transactions according to the subcontracting and supply ratios:

- (1) The exclusive type: component manufacturers with a subcontracting ratio of over 60 percent, supplying over 75 percent of total production to their principal car manufacturers.
- (2) The semi-exclusive type: component manufacturers with a subcontracting ratio of over 60 percent, supplying 50 - 75 percent of total production to their principal car manufacturers.
- (3) The dispersed type: component manufacturers with a subcontracting ratio of over 60 percent, supplying below 50 percent of total production to their principal car manufacturers.
- (4) The independent type: component manufacturers not classified into any of the above three types (Table 2).

From the figures for each type, it is known that the proportions of exclusive and dispersed manufacturers in the total (32 percent each) is larger than that of other two types. The total for the exclusive and semi-exclusive types is small in Korea at only 56 percent compared with 70 percent in Japan in the same two categories.

**Table 2 Category by Subcontracting and Supply Ratio (Sample: 204 companies)**

Dependence on Principal Car Manufacturers Subcontracting Ratio	Under 50%	50% - 75%	Over 75%
Under 60%	Independent Type 13% (26 companies)		
60% - 80%			
Over 80%	Dispersed Type 32% (66 companies)	Semi-exclusive Type 23% (46 companies)	Exclusive Type 32% (66 companies)

Note: \* Subcontracting Ratio in the Sales

Source: Author made this table from *The Handbook of Automobile Industry 1992* published by the Korean Auto Industries Cooperative Association.

We can see from the average year of establishment (Table 3) that manufacturers of the independent, the semi-exclusive and the dispersed types were established in the first half of the 1970s and are relatively aged, whereas exclusive manufacturers were established in the latter half of the 1970s.

In average number of workers, semi-exclusive manufacturers had the largest number (600), then came dispersed (387), exclusive (259), and independent manufacturers (247).

Semi-exclusive manufacturers sold the highest amount per company, 43.4 billion won (5.8 billion yen) on average, while the average amount for all manufacturers was 26 billion won (3.5 billion yen). The average turnover of dispersed manufacturers was about average, but the figures for exclusive and independent manufacturers were below the average. To summarize the above, semi-exclusive manufacturers are much larger in terms of average number of workers and amount of sales, followed by the dispersed, exclusive, and independent types. The reason why semi-exclusive manufacturers are bigger is that many such companies have received capital from car manufacturers or have strong personal connections with them. Dispersed manufacturers have neither capital nor personal connections in car manufacturers, but some are joint ventures with foreign capital while others have developed by their own accumulation of technology.

Some manufacturers of the exclusive type, the most recent of the four types, were established during the 1980s. The establishment of these manufacturers is assumed to be the result of the increases in exports and domestic demand. Many manufacturers of this type assemble body components. In contrast, companies of

the independent type, the oldest among the four, manufacture universal components.

### 3. The Superior Quality Control in Semi-Exclusive Manufacturers

I obtained data about quality through correspondence with 66 components manufacturers between February and April 1993. A questionnaire was distributed by KAICA to 200 component manufacturers. Some of them were interviewed. From the results of this data, it appeared that among the four types the level of quality control was best in semi-exclusive type manufacturers. In Japan, generally speaking, it is exclusive manufacturers which are largest in number and best at quality control. It can be said that car manufacturers with many exclusive manufacturers have advantages both in terms of production costs and quality of products.

However, the results of the data from the 66 Korean component manufacturers showed that the average proportion of inferior articles in processing was lowest among semi-exclusive manufacturers at 2.19 percent, followed by the exclusive (2.25 percent) and independent types (2.86 percent). Dispersed manufacturers, which account for 32 percent of the total, showed the worst ratio with 4.16 percent.

In the ratio of returned goods, semi-exclusive manufacturers again achieved the best performance with 0.19 percent, followed by exclusive manufacturers with 0.26 percent, dispersed manufacturers with 0.59 percent, and independent manufacturers with 0.61 percent.

**Table 3 The Characteristics of Four Types of Components Manufacturers (Sample: 204 companies)**

Category	Exclusive Type						Semi-Exclusive Type				Dispersed Type	Independent Type	Total
	Hyun-dai	Kia	Daewoo	Others			Hyun-dai	Kia	Daewoo	Others			
Number of Companies	66	27	23	9	7	46	19	12	10	5	66	26	204
Establishment Year	1978	1977	1979	1973	1979	1971	1967	1970	1976	1978	1972	1970	-
Number of Employees	259	304	245	159	68	600	702	625	577	195	387	247	-
Sales in 1991 (100 million won)	126	149	152	71	27	434	455	578	499	136	261	128	260

Source: Same as Table 2.

Checking the data in detail, both the exclusive and semi-exclusive type manufacturers were concentrated in the low ratio, while dispersed and independent type manufacturers extended widely from the low to high ratio, in terms of the proportions of inferior products in processing and returned goods. It goes without saying that there are exceptional manufacturers; for example, semi-exclusive type manufacturers producing over 10 percent inferior products in processing, or independent type manufacturers scoring less than 1 percent in the same category. It is assumed that one reason why dispersed type manufacturers produce a higher proportion of inferior products in processing is that they include casting or forging processes.

In any case, these ratios for inferior products in processing and the ratio of returned goods are both much higher than the levels under Japanese "PPM" quality control (parts per million: the policy of aiming at less than one inferior article in the production of every million articles).

Taking the above results into consideration, it is possible to say that the task for car manufacturers is to improve production technology, while keeping good relations with many component manufacturers of the exclusive and semi-exclusive types.

### *III. Many Problems to Be Overcome*

There are many tasks to be overcome by Korean car manufacturers. Not only do they need to improve the production technology of components manufacturers, but also they have many problems in the field of model design. Despite such weak fundamentals, Korean car manufacturers also have to face the reorganization of the world economy as the world market is reintegrated into blocs. While Korean car manufacturers have advanced to overseas markets, their way of entering the world market is different from that of Japanese car manufacturers, which are able to develop technology by themselves. Korean companies have to make inroads into foreign markets while at the same time introducing technology from overseas and paying large royalties. Moreover, with their expansion of domestic production facilities, they need to increase their share of the world market. This is a risky management strategy when they lack high technology. Nevertheless, they are able to maintain it because they have a favorable economic environment supported by the business groups, and government policy which supports the industry.